

# Advanced Analytics Platform

Intelligence-led advanced analytics for financial crime detection

## The Challenge

Combining back-end data pre-processing with advanced modelling and run-time deployment of models, inside a single unified framework, is key to success in financial crime detection.

The initial data pre-processing challenge involves generating profiles from customer transactions, filtering on specific entities, sampling data, and pruning irrelevant features.

Advanced modelling pushes beyond static pre-defined rules, digging deeper into data to extract complex criminal patterns of behaviour that evade the rule-based approach.

Historical data enables advanced models to learn about the transactional patterns of normal customer behaviour from which to infer abnormal behaviour and trigger timely investigations.

The deployment challenge is to implement these advanced models in detection engines where they can run in combinations with each other and with standard rules to reduce overall detection error.

Finally, an overarching test is to ensure that the build and execution of a workflow – from data, through models, into detection and action – is a simple, friendly and transparent user experience.

## Our Approach

The NetReveal® Advanced Analytics Platform (AAP) is a full analytics ecosystem that empowers citizen data scientists to create, validate, and test sophisticated detection methods and processes.

AAP enables data to be explored and visualised, its features to be assessed, supervised and unsupervised machine learning models to be trained, and performance metrics to be displayed.

AAP is a key feature of NetReveal's advanced solution to fraud and compliance, building an extra layer of defence against financial crime on top of human or machine-tuned rules.

AAP is available as part of a wider NetReveal deployment or as a consultancy engagement to augment an existing third-party solution.

### NetReveal AAP provides:

- Smarter user experience reducing the barrier of entry to advanced analytics
- Intelligence-led approach to modelling, segmentation and classification
- Fraud / AML application driving reduced false positives and false negatives
- Suspicious activity risk score determination
- Model governance and model explainability that align with compliance frameworks.

BAE Systems named a  
**“RiskTech Quadrant  
 Category Leader”**  
 in the Financial Crime Risk  
 Management Systems: Enterprise  
 Fraud, Market Update 2018

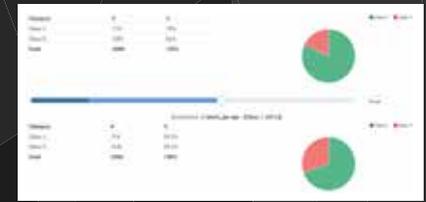


**Challenged with Recruiting  
 and Retaining Skilled  
 Data Scientists?**

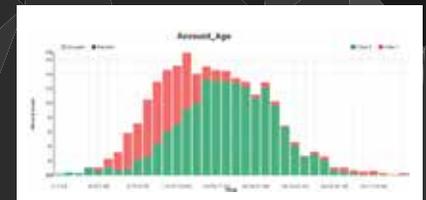
Our on-demand Managed Analytics Service can be called upon to augment in-house teams or provide expert guidance on combating the latest evolving financial crime or cyber scenarios.

## Additional capabilities

Feature	Benefit
Data Processing	<p>Data ingest and reduction functions that pre-process and prepare datasets for modelling</p> <ul style="list-style-type: none"> <li><b>Data Profiling</b> – Integrates with NetReveal Scenario Manager to rapidly configure and generate customer transaction profiles</li> <li><b>Data Partitioning</b> – Splits data for training, validation and testing of model</li> <li><b>Data Focusing</b> – Filter data on individual categories within a categorical field</li> <li><b>Data Sampling</b> – Population random sampling and majority class under-sampling</li> </ul>
Advanced Modelling	<p>Flexible self-service analytics that detect patterns in complex datasets and generate useful insight</p> <ul style="list-style-type: none"> <li><b>Statistics</b> <ul style="list-style-type: none"> <li>Time-based or static feature visualisation</li> <li>Feature relevance assessment and pruning</li> <li>Principled Components Analysis</li> </ul> </li> <li><b>Supervised Learning</b> <ul style="list-style-type: none"> <li>Classification algorithms, e.g. Rule Induction, Neural Network, Random Forest</li> <li>Auto-tuning of hyper-parameters</li> <li>Performance summary dashboards</li> <li>Global explanation of model prediction</li> <li>PMML file export of models</li> </ul> </li> <li><b>Unsupervised Learning</b> <ul style="list-style-type: none"> <li>Nonlinear dimensionality reduction</li> <li>Clustering algorithms, e.g. K-Means, DBSCAN, SOM</li> <li>Outlier detection analytics, e.g. Isolation Forest</li> <li>Global explanation of cluster assignment</li> <li>Global explanation of outlier detections</li> </ul> </li> </ul>
User Experience	<p>A user-friendly and visual experience for end-to-end data processing, modelling and deployment</p> <ul style="list-style-type: none"> <li><b>Workflow Management</b> – projects, experiments and task organisation</li> <li><b>Model Governance</b> – model validation and test displays and exportable modelling artefacts</li> <li><b>No Coding Required</b> – from data to deployed models with ease, no scripting or programs</li> <li><b>Citizen Data Science</b> – intuitive functionality that encourages data science best practice</li> </ul>



Data Preparation



Statistical Analysis



Supervised Modelling



Unsupervised Modelling



Model Comparison

Contact Details: US: +1 (703)848 7000 | UK: +44 (0) 1483 816000 | AUS: +612 9240 4600

BAE Systems, 8000 Towers Crescent Drive, 13<sup>th</sup> Floor, Vienna, VA 22182, USA  
 E: [learn@boesystems.com](mailto:learn@boesystems.com) | W: [boesystems.com/financialcrime](http://boesystems.com/financialcrime)

[linkedin.com/company/boesystemsai](https://www.linkedin.com/company/boesystemsai)

[twitter.com/boesystems\\_ai](https://twitter.com/boesystems_ai)